

Image Demosaicing and Enhancement System**ABSTRACT**

A method for operating a data processing system to generate a second image
5 from a first image. The first image includes a two dimensional array of pixel values,
each pixel value corresponding to the light intensity in one of a plurality of spectral
bands at a location in the first image. The method utilizes a linear transformation of a
vector derived from super input pixels to obtain a vector that includes at least one
super output pixel. The super input pixels are defined by separating the pixels of the
10 first image into a plurality of input image planes having identical numbers of pixels
corresponding to the same spectral band. Each super input pixel is a vector of
dimension P , where P is the number of the input image planes. Similarly, a set of
output image planes is defined, each pixel in a given output image plane representing
the intensity of the second image in one of a plurality of spectral bands at a
15 corresponding point in the second image. Each super output pixel is a vector of
dimension Q , where Q is the number of the output image planes, each component of
that vector being a pixel from a corresponding output image plane. In the preferred
embodiment of the present invention, the linear transformation depends on the
properties of the optical system and the illumination source used to generate the first
20 image.